Pioneer Farm Agroecosystems Research

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Agroecosystems Research Overview
Speaker's Task Force on Water Quality
May 8, 2019 Lancaster WI

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PIONEER FARM

Overview

- Background
- Investment in Research Infrastructure
- Impact of the Data
- Leveraging The Investment

Wisconsin Agricultural Stewardship Initiative

- Ben Brancel, Secretary DATCP
- May 9, 2000 WASI Announced
- Objective: Evaluate impact of farm management practices on environmental and economic sustainability.

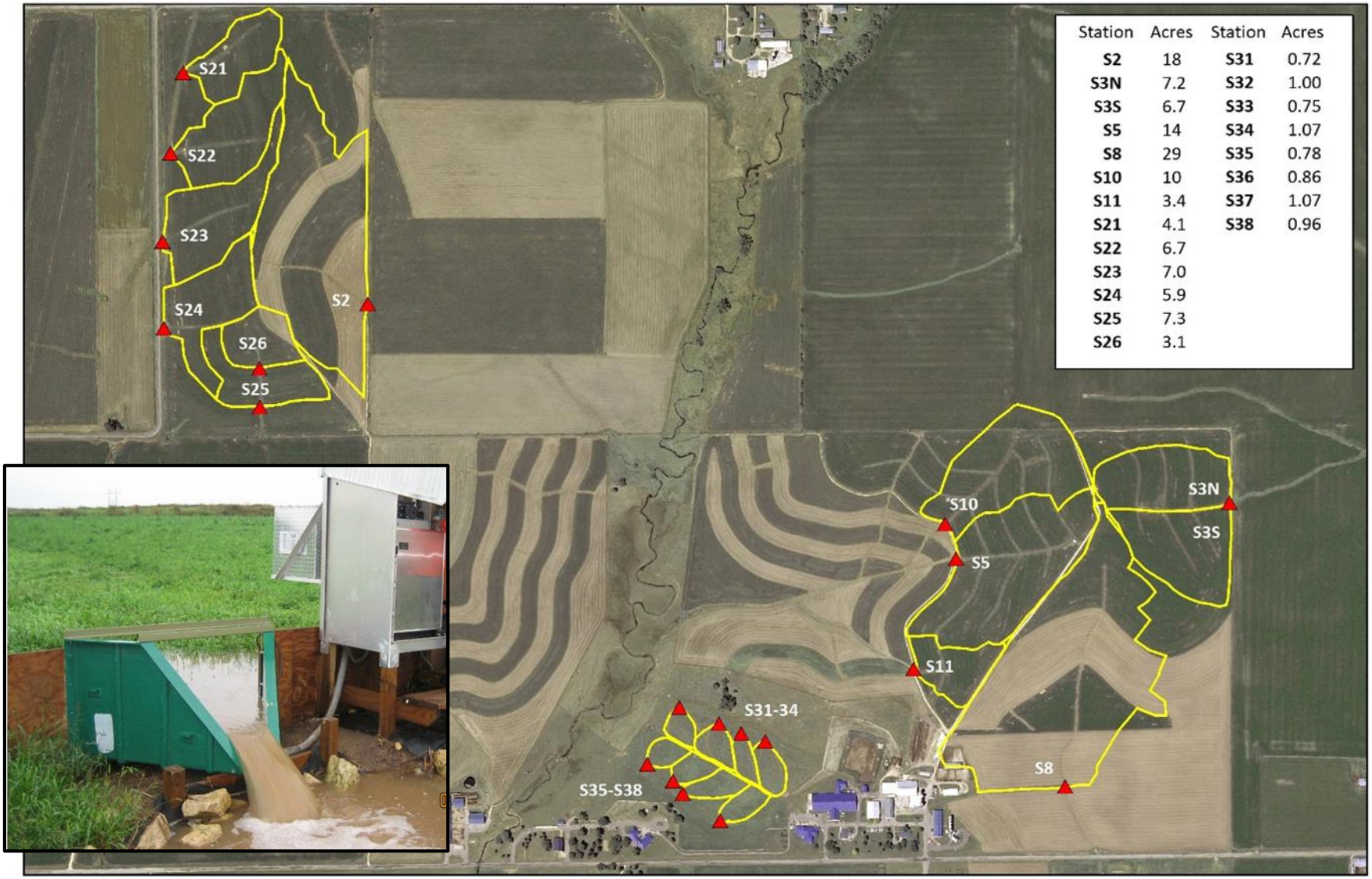
Producer Involvement

- Farmer Steering Committee
  - Mark Riechers Josh and Gretchen Kamps
  - Tom Kunkel Kyle Vesperman Shannon Wolf
  - Tom Evenstad John Ihm Greg VanNatta
- Farm-Led Watershed Groups
  - Lafayette Ag Stewardship Alliance
  - Jo Daviess County Soil and Water Health Coalition
  - Grant County Farm Group

Research Investment ($5M)

- EOF Surface-Water Runoff
  - 21 Sites/186 Site Years, $4,350,00
- Perennial Stream Gauging/Hydrologic Observatory
  - 1 Site/5 Site Years, $250,000
- Groundwater Monitoring Wells
  - 12 Wells/120 Site Years, $360,000
- Undisturbed Soil Core Lysimeters
  - 16 Lysimeters/32 site years, $128,000
- NRCS SCAN Meteorological Station, $?

Runoff Monitoring



Station	Acres	Station	Acres
S2	18	**S31**	0.72
S3N	7.2	**S32**	1.00
S3S	6.7	**S33**	0.75
S5	14	**S34**	1.07
S8	29	**S35**	0.78
S10	10	**S36**	0.86
S11	3.4	**S37**	1.07
S21	4.1	**S38**	0.96
S22	6.7		
S23	7.0		
S24	5.9		
S25	7.3		
S26	3.1		

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Pioneer Farm Research Runoff Infrastructure

Drainage Basin Boundaries

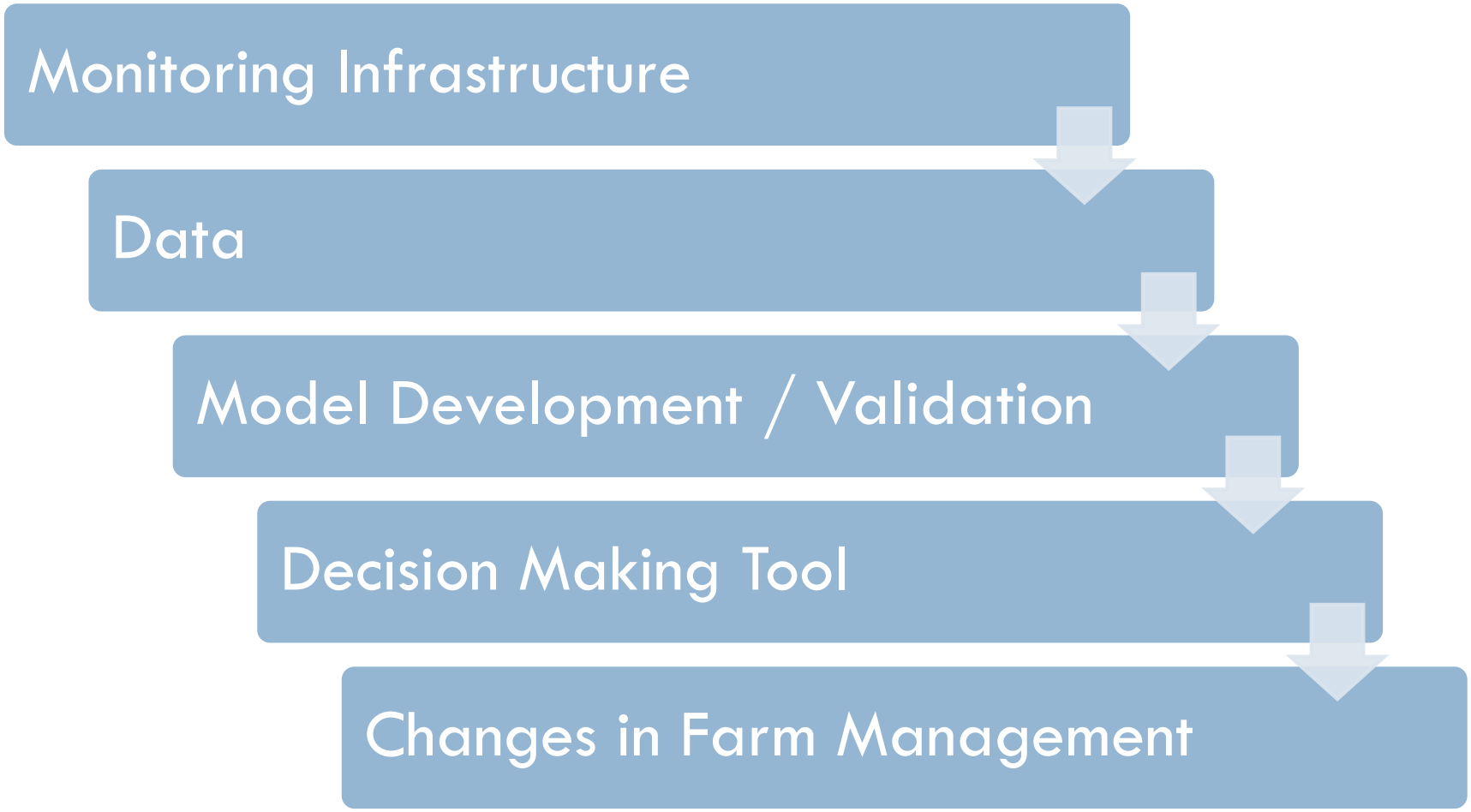
Runoff Monitoring Stations

0 500 1,000 1,500 Feet

N W E S

Cartography: Randy Mentz
November 13, 2014

Impact of Surface-Water Data

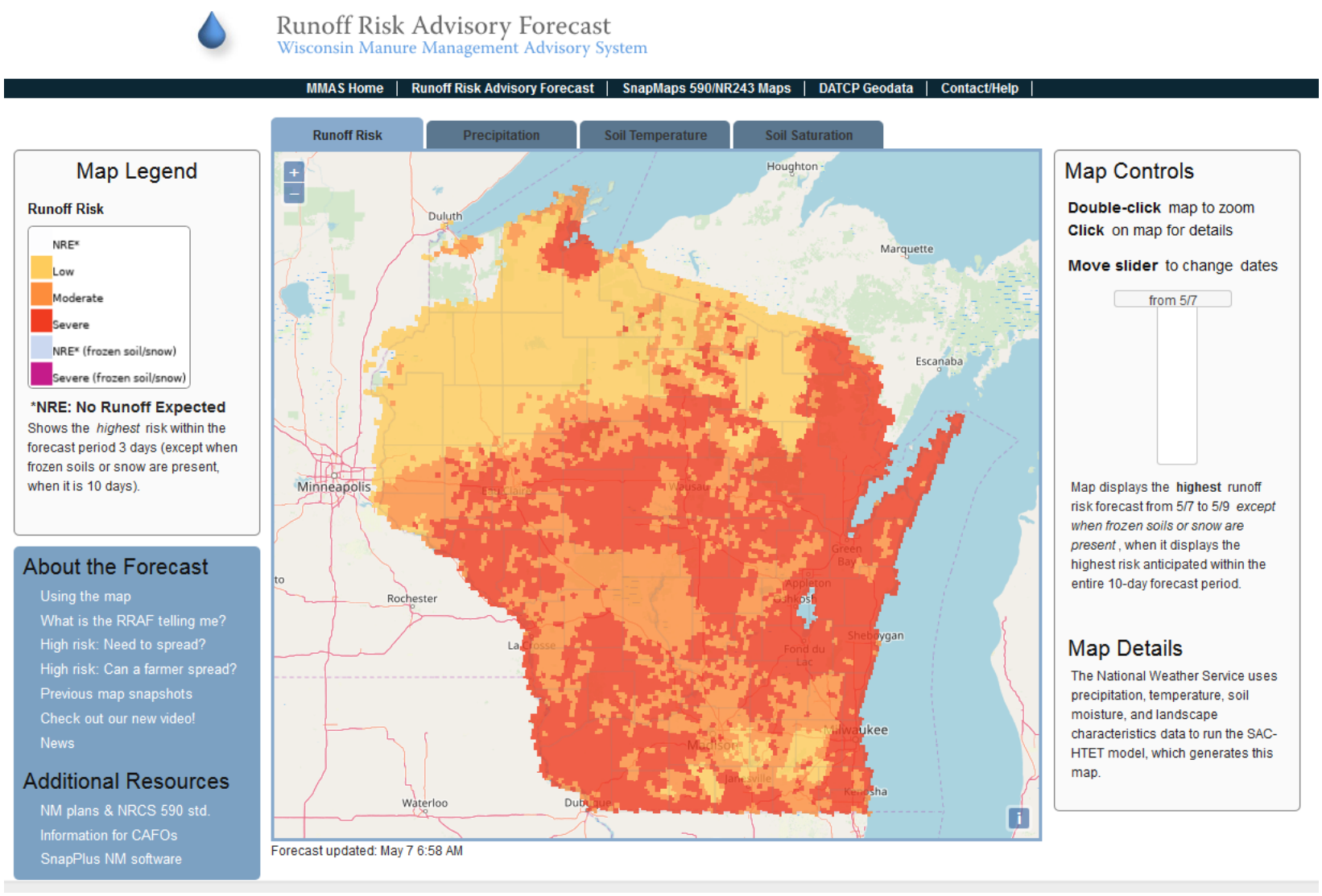


Example: WI Phosphorus Index

- Incorporated in the SnapPlus program
- Calculates Potential Soil and Phosphorus Runoff
- 3.3 million acres in WI (36% of Cropland)
- Supports Adaptive Management Programs
- Assists with Targeting Conservation Practices

https://snapplus.wisc.edu/

Example: Runoff Risk Advisory



Impact of Surface-Water Data

- APLE (Annual Phosphorus Loss Estimator)

  https://www.ars.usda.gov/midwest-area/madison-wi/us-dairy-forage-research-center/docs/aple-homepage/

- Barnyard Runoff Model

  https://extension.soils.wisc.edu/wcmc/a-new-tool-for-estimating-phosphorus-loss-from-cattle-barnyards-and-outdoor-lots/

- SWAT: Soil and Water Assessment Tool

Groundwater Monitoring Wells
12 Installations
in Cooperation with UW-Stevens Point

Undisturbed Soil Core Lysimeters
16 installations
In Cooperation with USDA/ARS

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Pioneer Farm Research
Groundwater Monitoring Infrastructure

Lysimeters Monitoring Wells

0 200 400 600 Feet

N W E S

Cartography: Randy Mentz
November 12, 2014

Proposed Groundwater Research

Investigating the relationship between crop nutrient management on groundwater nitrate and bacterial contamination in the Driftless Area of the Upper Mississippi River Basin.

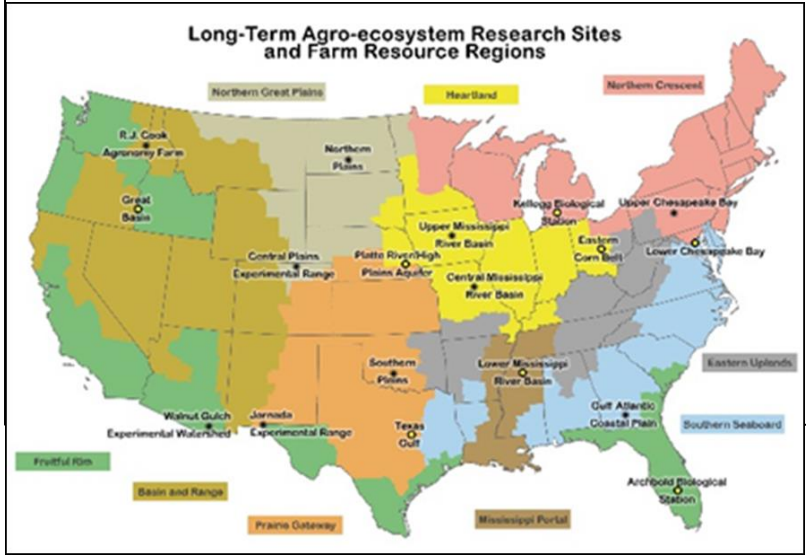
Dennis Busch[1], Andrew Cartmill[1], Tom Moorman[2], Gary Feyereisen[3], Francisco Arriaga[4] , and Paul McGinley[5]

[1]Univ. of WI-Platteville
[2]National Lab for Agriculture and the Environment, USDA / ARS
[3]Soil and Water Management Research Lab, USDA / ARS
[4]University of WI-Madison
[5]University of WI-Stevens Point

Research Networks

Long-Term Agroecosystems Research

- USDA ARS
- 18 Premier Research Sites
- Continental Scale
- Focus: Sustainable Intensification



Global Farm Platform

- 9 Farm Platforms
- Global Scale
- Focus: Sustainable Intensification

State Support for Research

- Historically
  - Approximately $300,000/year
  - Leveraged with Federal Grants
  - 6 Full-Time Personnel
- Currently
  - Approximately $5,000/year
  - Leveraged Federal Grants
  - 1.5 Full-Time Personnel

Questions?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Pioneer Farm
Surface Water
Runoff Monitoring
Station
uwplatt.edu/pioneerfarm
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